Space Weather Forecast

Issued on Friday, 07 January 2022 at 12:06 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of minor geomagnetic activity day 2 or 3 (8th or 9th).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Low over the past 24 hours, with only isolated low level Common class flares observed. There are currently two sunspot groups on the visible disc, and are both located in the southeast quarter. One is a small and relatively simple region, the other more western group is larger and a little more magnetically complex. No Earth-directed Coronal Mass Ejections (CMEs) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds were at slow-ambient levels. The total strength of the magnetic field carried by the solar wind remained weak, with the important northwards/southwards direction also weak and mostly northward orientated. Geomagnetic activity was Quiet.

Energetic Particles / Solar Radiation: The count of energetic particles (high energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to continue Low or Very Low. New or returning previous regions will potentially rotate onto the visible disc through the period. These may bring a slightly raised chance of isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: There are currently no Earth-directed CMEs. Solar winds are expected to remain mainly slow until later on day 2 (8th), when solar winds are likely to become enhanced in response to a faster wind from a coronal hole. Quiet geomagnetic activity is forecast until day 2 (8th Jan), with Unsettled to Active and a Chance of G1/Minor Storms for a 24 to 36 hour period. Activity probably returning back to Quiet again by day 4 (10th).

Energetic Particles / Solar Radiation: The count of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms anticipated in the absence of solar activity.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	20	20	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	5	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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